

**Remarks**

The Official Action dated January 17, 2007 has been carefully reviewed, and the present Response B addresses the issues raised in that Official Action.

Claims 1-22 were pending in the application.

Claims 9-14 are allowed.

Claims 1-8, 15, 16 and 18-22 are rejected.

Claim 17 is objected to.

Claim 1 is amended.

Claims 5, 21 and 22 are canceled without prejudice.

New claims 23-27 have been added.

Claims 1-4, 6-20 and 23-27 remaining in the application for consideration.

Claims 1 and 5 are rejected in the Official Action under 35 U.S.C. 102 (b) as being anticipated by Fuzishita et al. (US 4916311).

In response thereto, claim 1 has been amended to more clearly recite the biasing connections used by the present invention. More specifically, claim 1 has been amended to include the limitation of claim 5 wherein the deceleration electrode is directly connected to the positively biased end of the filaments and the filaments are further defined as each having a positively biased end and a negatively biased end.

It is submitted that claim 1, and claims 2-4 and 6-8 which depended there from, are not anticipated or made obvious by the cited art because Fuzishita et al. does not show the deceleration electrode connected directly to the positively biased end of the emitters and because Fuzishita et al. teaches away from this connection. More specifically, Fuzishita et al. shows variable, and therefore controllable, voltage sources on each of the different electrodes involved in each of the embodiments of Figures 5, 7-10 and 13. The focus of Fuzishita et al. also appears to be control of these voltages to achieve the desired balance of currents, as exemplified by the paragraph at column 12, lines 28-43. Fuzishita et al. even names the deceleration electrode its "electron energy control electrode 122" column 8, lines 22-23. As such, it is submitted that Fuzishita et al. clearly wants to control these electrode voltages and therefore teaches away from

using a direct connection between the deceleration electrode and the positively biased ends of the filaments, as presently claimed.

For the above reasons, it is therefore submitted that claim 1 is allowable and that claims 2-4 and 6-8 are allowable as depending there from.

Claims 15 and 19 are rejected in the Official Action under 35 U.S.C. 102(b) as being anticipated by Mack et al. (WO 02/052608). Reconsideration is respectfully requested, as it is submitted that the Faraday cup of Mack et al. is not a vented Faraday cup as shown, described and presently claimed herein. More specifically, the Faraday cup 306 described in Mack et al. is not described as being vented or as having any special qualities. Further, both the Faraday cup 306 and the grounded enclosure 304 shown in Mack et al. have only a single opening through which the gas cluster ion beam enters. This single opening is therefore essential to the operation of the Faraday cup of Mack et al. and therefore does not suggest the use of any venting or additional vents. Further, the inventor of the present application, Michael E. Mack, is the first named inventor on the cited reference of Mack et al. and did not consider the Faraday cup 306 to be a vented device at the time of that application.

New claims 23 and 24, depend from claim 19, are added herewith in further emphasis of the vented nature of the Faraday cup. It is submitted that new claims 23 and 24 are neither taught nor made obvious by the cited art for the same reasons given for claim 19.

Claims 2-4 and 6-8 are rejected in the Official Action under 35 USC 103(a). It is submitted that claims 2-4 and 6-8 are allowable for the same reasons recited above in regard to claim 1 as claims 2-4 and 6-8 depend there from.

Claims 16-18 and 20 are rejected in the Official Action under 35 USC 103(a) as being unpatentable over Mack et al. in view of Fuzishita et al.. It is submitted that claims 16, 18 and 20 are allowable in view of the arguments set forth above in reference to the rejection of claims 15 and 19, from which claims 16-18 and 22 depend, respectively.

Applicant appreciates the allowance of claims 9-14. New claims 25-27 are submitted herewith having a broader scope than the allowed claims 9-14. No new matter has been added. It is submitted that new claims 25-27 are neither taught nor made obvious by the prior art for the same reasons given above in regard to claims 15 and 19.

In view of the above amendments and discussion, it is submitted that claims 1-4, 6-20, 23 and 24 are in condition for allowance and such action is earnestly solicited.

Application No. 10/667,006  
Response B to Official Action dated 1/17/07

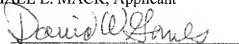
Should there be any questions after reviewing this paper, the Examiner is invited to contact the undersigned at 617-345-3000.

Dated: May 17, 2007

Respectfully submitted

MICHAEL E. MACK, Applicant

By:

A handwritten signature in dark ink, appearing to read "David W. Gomes", is written over a horizontal line.

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